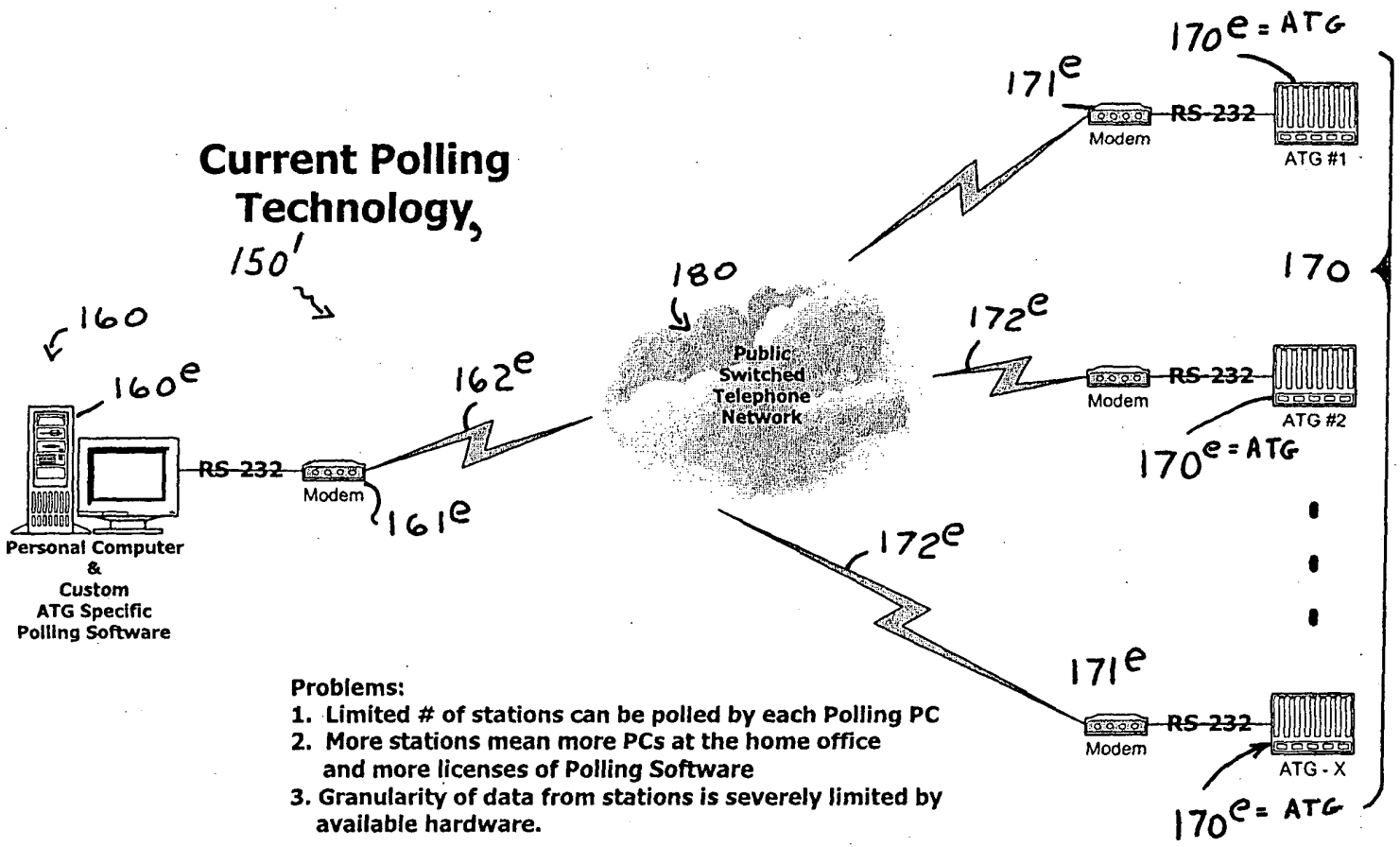


Problems:

1. **Limited # of stations can be polled by each Polling PC**
2. **More stations mean more PCs at the home office and more licenses of Polling Software**
3. **Granularity of data from stations is severely limited by available hardware.**

4. ***Not possible to get a snapshot of levels at all stations***
5. **Expansion requires more hardware and maintenance at the home office, along with additional dedicated phone lines for outgoing calls. (see Expansion)**
6. **No standard way to keep time synchronized at all stations so local data polls occur at the same time.**

FIG. 1.
(PRIOR ART)

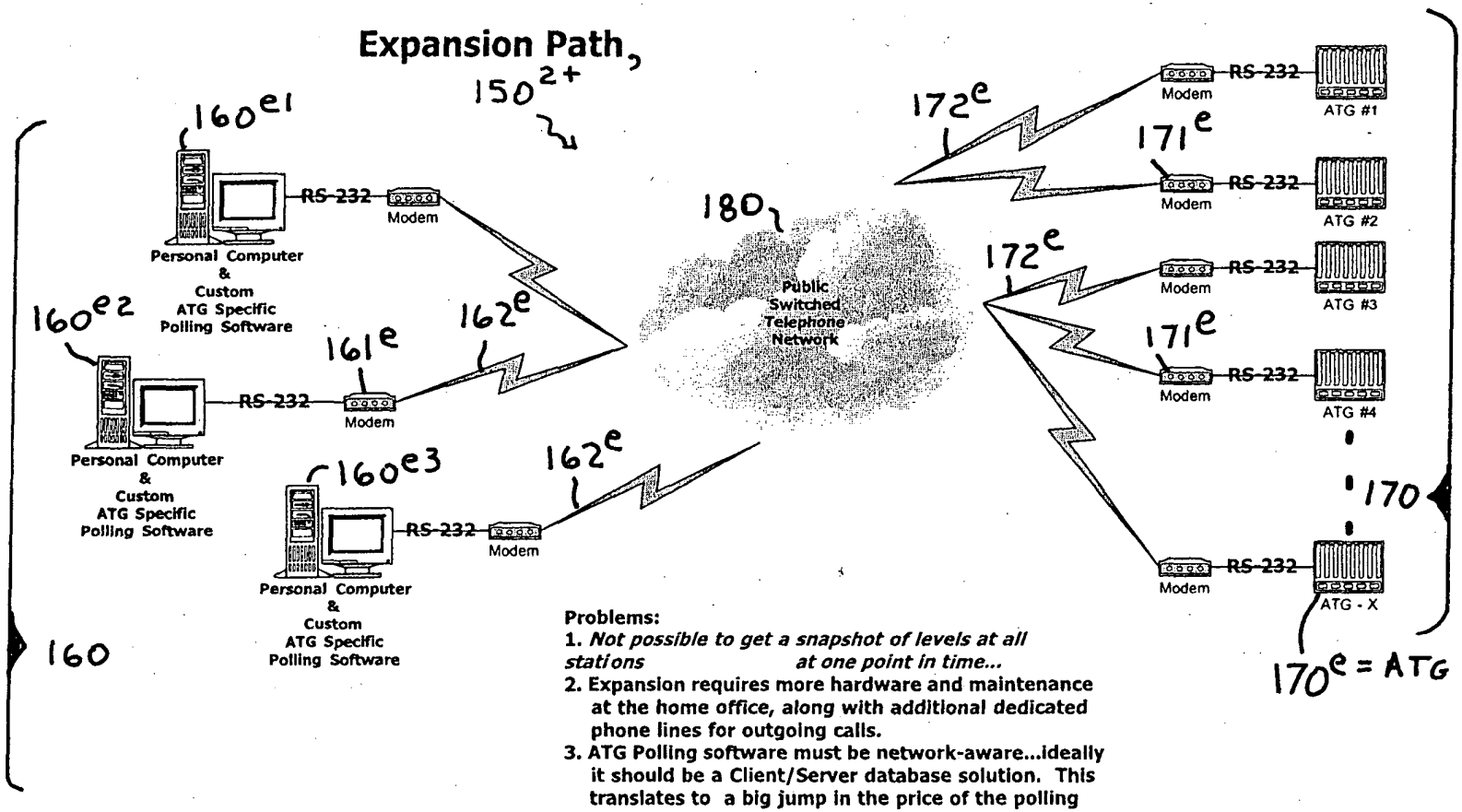
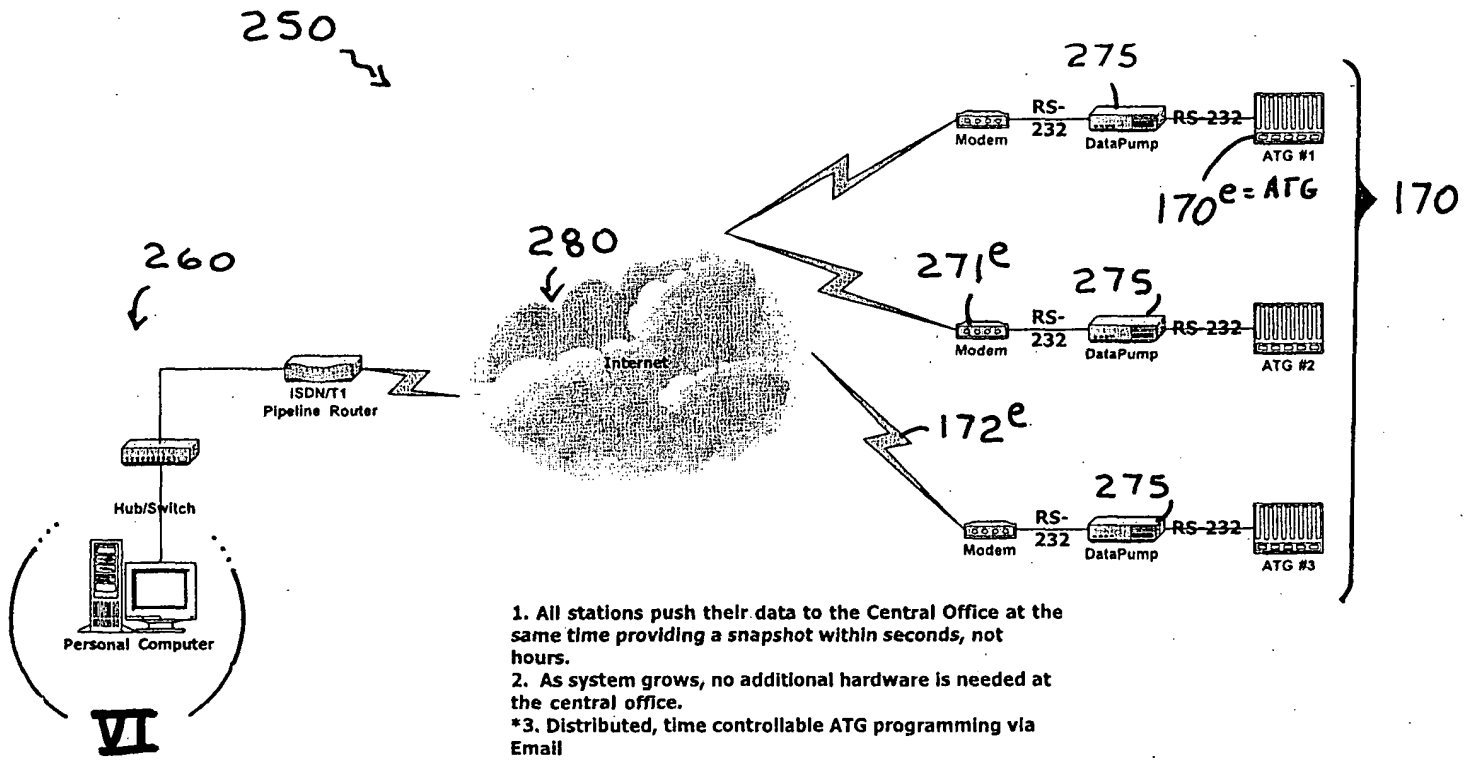


FIG. 2.
(PRIOR ART)

Push Technology - Small System



1. All stations push their data to the Central Office at the *same time providing a snapshot within seconds*, not hours.
2. As system grows, no additional hardware is needed at the central office.
*3. Distributed, time controllable ATG programming via Email
*4. Direct ATG programming via built-in Web Server
5. Time is kept synchronized via Internet Time Servers
6. Ethernet port provides instant WAN capabilities and eliminates the need for a modem & phone line.
7. 4 Serial ports provide expansion to poll other devices.

FIG. 3.

Push Technology - Expansion Path

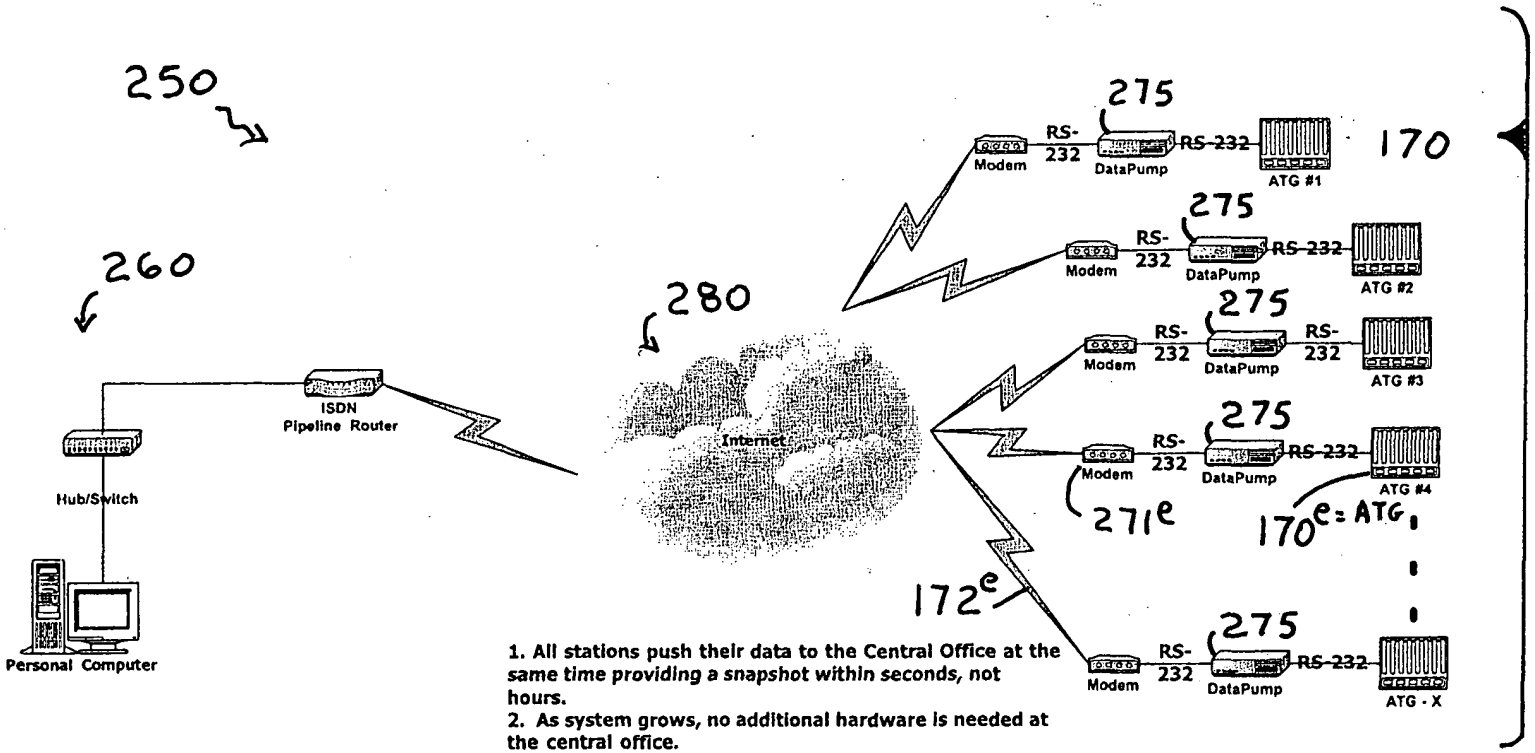


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FIG. 4.

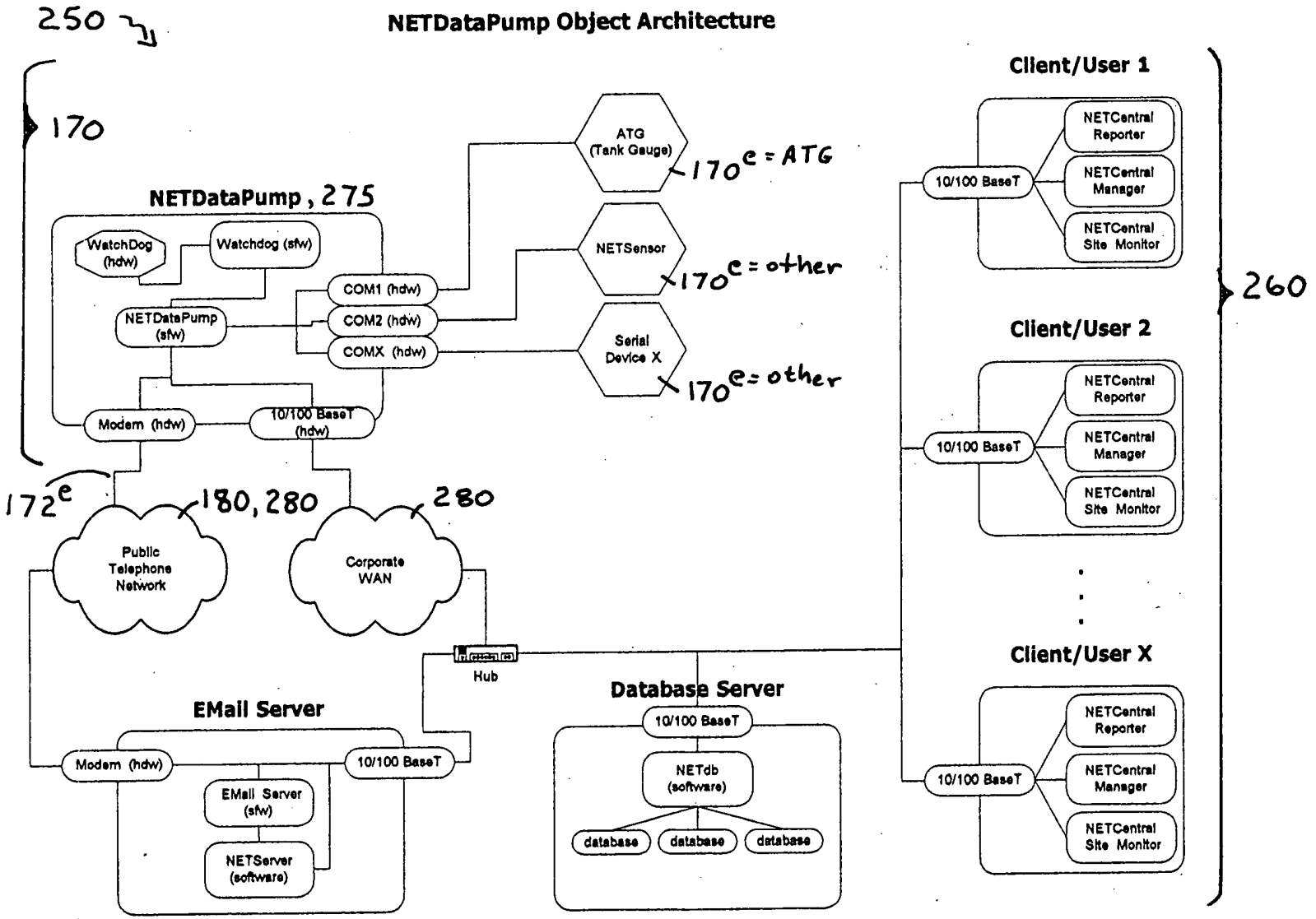
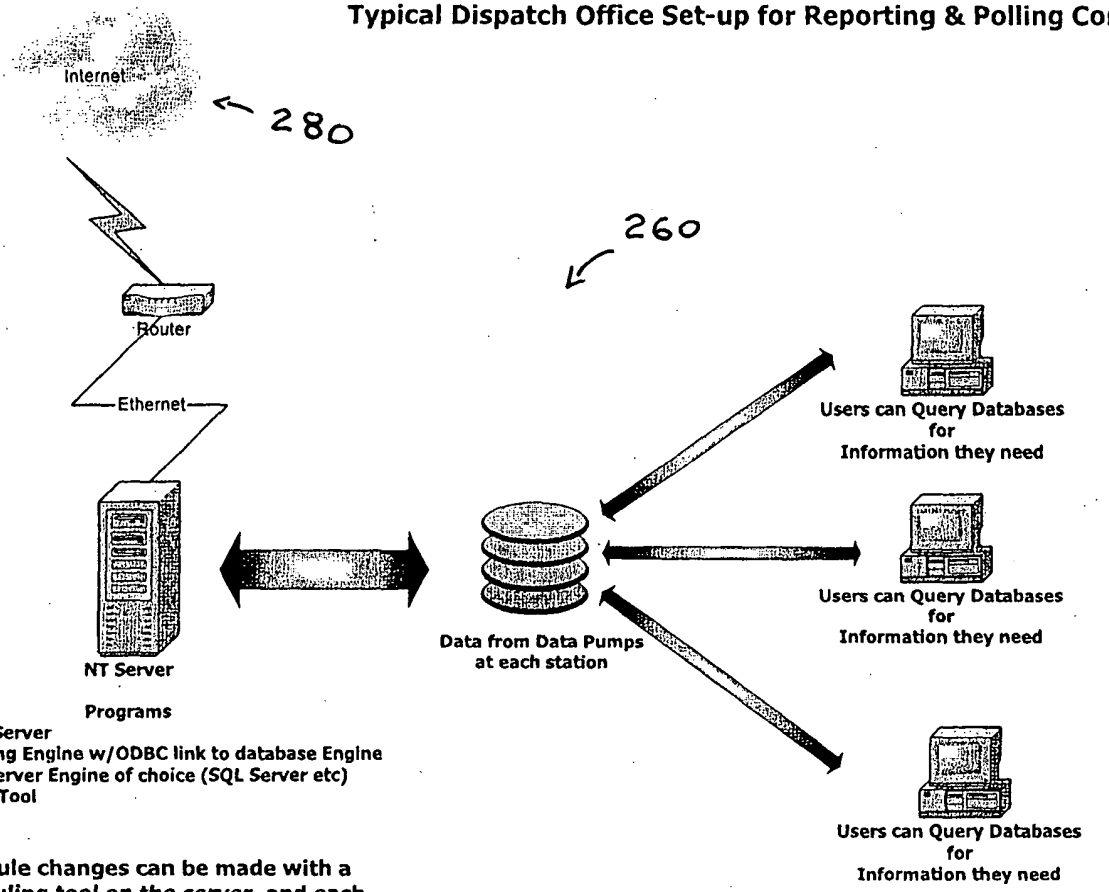

250
NETDataPump Object Architecture
170
NETDataPump, 275
WatchDog (hdw)
Watchdog (sfw)
NETDataPump (sfw)
COM1 (hdw)
COM2 (hdw)
COMX (hdw)
Modem (hdw)
10/100 BaseT (hdw)
ATG (Tank Gauge)
NETSensor
Serial Device X
170e = ATG
170e = other
170e = other
172e
180, 280
280
Public Telephone Network
Corporate WAN
Hub
EMail Server
Modem (hdw)
10/100 BaseT
EMail Server (sfw)
NETServer (software)
Database Server
10/100 BaseT
NETdb (software)
database
database
database
Client/User 1
10/100 BaseT
NETCentral Reporter
NETCentral Manager
NETCentral Site Monitor
Client/User 2
10/100 BaseT
NETCentral Reporter
NETCentral Manager
NETCentral Site Monitor
Client/User X
10/100 BaseT
NETCentral Reporter
NETCentral Manager
NETCentral Site Monitor
260

FIG. 5.

Typical Dispatch Office Set-up for Reporting & Polling Control



Schedule changes can be made with a scheduling tool on the server, and each station can pick up the changes when it sends it's data on the next polling interval via a config file in it's directory on the FTP Server.

Time is kept in sync via the Data Pump's connection to the internet. The Data Pump synchronizes it's time with a Time Server available on the internet, as does the NT Server.

Data is propragated to the Central location via Email. Scheduling changes are sent back to the remote site via EMail as well.

FIG. 6.

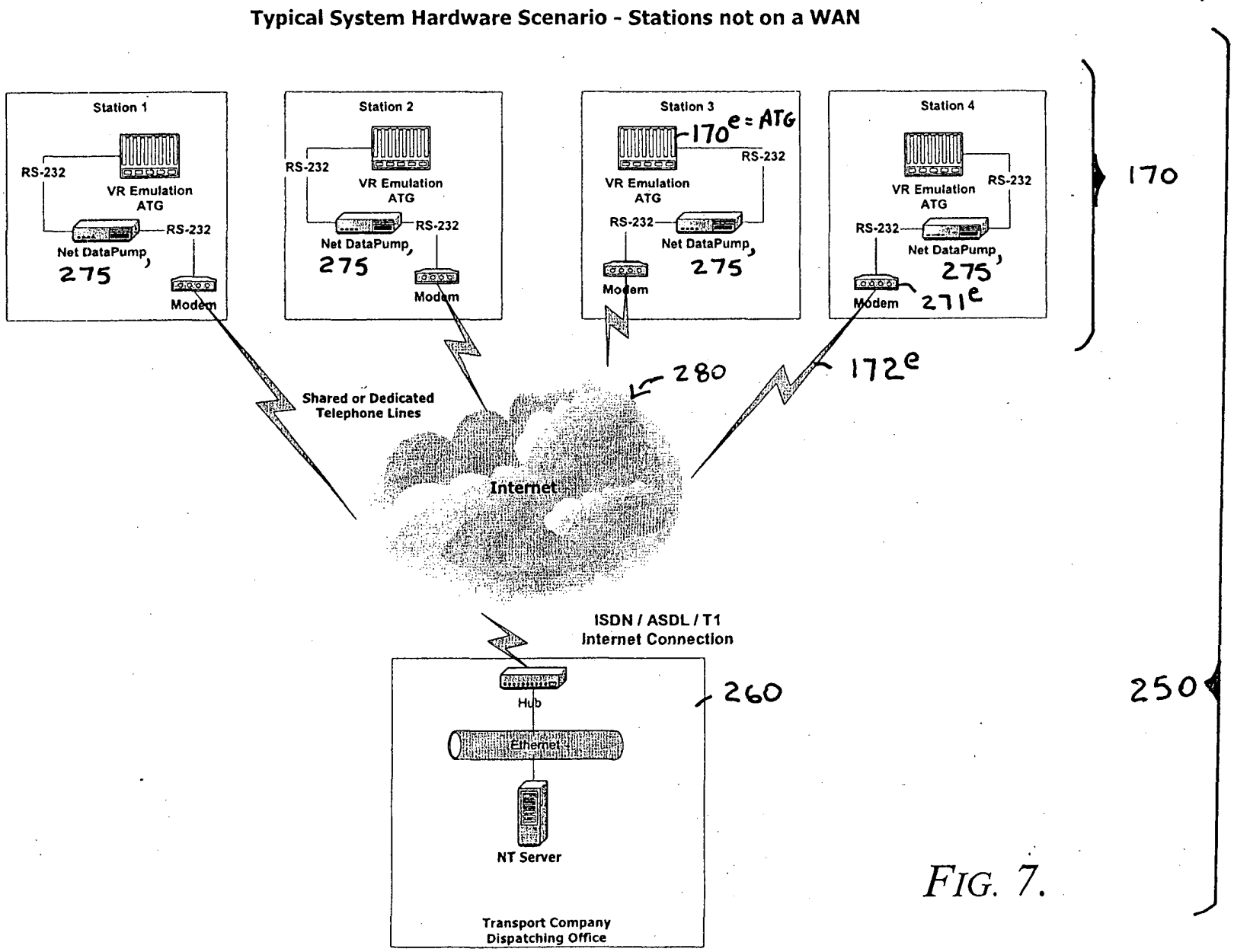

Typical System Hardware Scenario - Stations not on a WAN
Station 1
RS-232
VR Emulation ATG
RS-232
Net DataPump, 275
Modem
Station 2
RS-232
VR Emulation ATG
RS-232
Net DataPump, 275
Modem
Station 3
170e = ATG
RS-232
VR Emulation ATG
RS-232
Net DataPump, 275
Modem
Station 4
RS-232
VR Emulation ATG
RS-232
Net DataPump, 275
Modem
271e
170
280
172e
Shared or Dedicated Telephone Lines
Internet
ISDN / ASDL / T1 Internet Connection
Hub
Ethernet
NT Server
Transport Company Dispatching Office
260
250

FIG. 7.

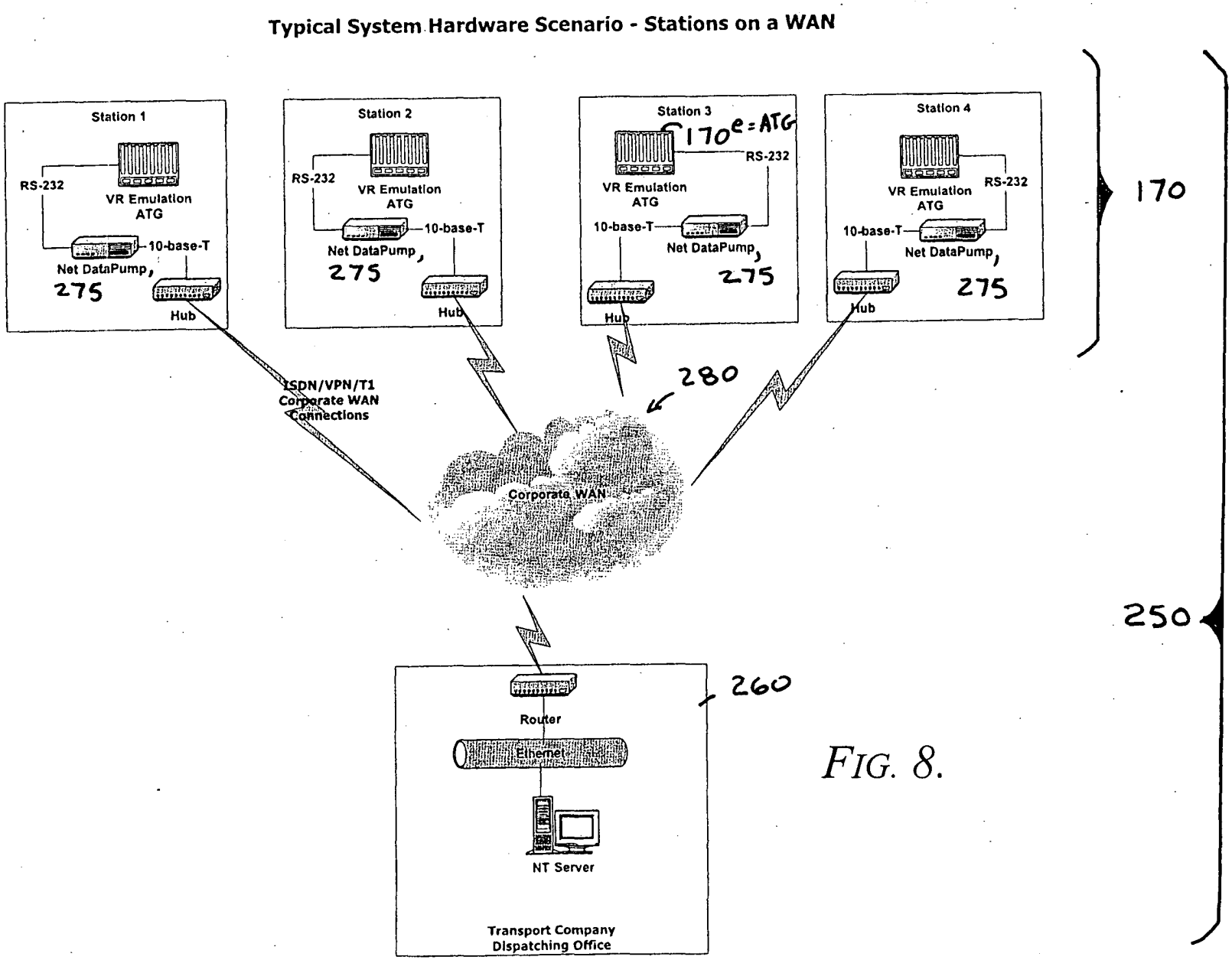

Typical System Hardware Scenario - Stations on a WAN
Station 1
RS-232
VR Emulation ATG
10-base-T
Net DataPump, 275
Hub
Station 2
RS-232
VR Emulation ATG
10-base-T
Net DataPump, 275
Hub
Station 3
170e = ATG
RS-232
VR Emulation ATG
10-base-T
Net DataPump, 275
Hub
Station 4
RS-232
VR Emulation ATG
10-base-T
Net DataPump, 275
Hub
170
ISDN/VPN/T1 Corporate WAN Connections
280
Corporate WAN
250
260
Router
Ethernet
NT Server
Transport Company Dispatching Office

FIG. 8.